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MARKING POWER LINES TO REDUCE AVIAN COLLISION MORTALITY IN THE SAN LUIS VALLEY, COLORADO

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Abstract: We examined the effectiveness of 2 marking devices designed to increase visibility of power lines and reduce avian collision mortality during spring and fall migration periods, 1988-91, in the San Luis Valley, Colorado. Eight 0.8-km segments of power line were marked with either yellow spiral vibration dampers or yellow fiberglass swinging plates and compared with 8 adjoining unmarked segments. Primary species groups studied included cranes (*Grus canadensis* and *G. americana*), Canada geese (*Branta canadensis*), and ducks (various *Anatinae*). Raptors, shorebirds, wading birds, and passerines were also monitored. Both marker types reduced avian collision mortality by >50% ($n = 139$, $P < 0.02$). Mortality rates (collisions/overflights) on marked lines were reduced by a factor of 2.1 for ducks, 4.6 for cranes, and 6.7 for geese. Flight behavior responses to marked lines varied among species groups with regard to reaction type, reaction distance, and height above line. Cranes were more affected by marked lines with regard to their reaction type and distance than were geese or ducks. Generally, all species flew higher over marked lines. Weather, particularly wind, was a significant factor influencing collision frequency ($P < 0.05$). Juvenile cranes were more vulnerable to collisions than adults ($P < 0.01$). Most birds involved in collisions were healthy and in good-excellent body condition, indicating disease and condition were not important factors influencing collision frequency. Because fiberglass plates caused structural damage to electric distribution lines, spiral vibration dampers used alone or in combination with avian marker balls are recommended as methods for reducing avian collision mortality in problem areas.

Key Words: collisions, *Grus americana*, *G. canadensis*, power lines, sandhill crane, waterfowl, whooping crane

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